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is by Mr. Woodward (agreeing with Professor Boyd Dawkins) considered to be identical with *H. minutus* from the caves and fissures of Malta.

The Indian species are *sivalensis*, *iravaticus* and *namadicus* from the Siwalik hills, and *palæindicus* from the Narbadas.

MINERALOGY AND PETROGRAPHY.[1]

Mineralogical News.—The late Dr. Lasaulx, of Bonn, recently examined[2] very thoroughly the mineral corundum with reference to its microstructure and optical properties. The fact that sections of this mineral cut perpendicular to the vertical axis often show a biaxial interference figure in converged polarized light has been known for some time. Lasaulx attempts to find the cause of this. Sections of crystals from nine localities were carefully made and thoroughly studied. In summing up the results of his examinations he concludes that (1) corundum is undoubtedly a uniaxial mineral, crystallizing in the hexagonal system; (2) the anomalies in optical properties are due to irregularity in growth; (3) this irregularity in growth often gives rise to a zonal arrangement in which the different zones are in twinning position to each other, the twinning planes and planes of growth being identical; (4) the optical anomalies are due in some cases to tension in the individual zones. Compression obtained in a direction normal to their greatest extension in the base; consequently the plane of the optical axes is parallel to this direction of the lamellæ; (5) in other cases where the different lamellæ are twinned, optical disturbances are produced; finally (6) decomposition may give rise to aggregate polarization. ——Orthoclase has been found for the first time as a druse mineral in leucite-tephrite.[3] In the cavities of this rock were found crystals of phillipsite, calcite, orthoclase (adularia), altered pyrite and calcite again, in a regular order of deposition. The adularia occurred in groups covering the phillipsite and also in perimorphs of calcite. Crystals of the latter mineral were covered with a druse of adularia, and showed under the microscope a rim with aggregate polarization, as if the calcite substance were gradually being replaced by adularia.——In an article on göthite,[4] Ed. Palla declares as a result of a series of measurements on crystals from Cornwall, that the mineral is either orthorhombic with the axes a : b : c = .9163 : 1 : .6008, or monoclinic with $\beta = 90^\circ\ 36'\ 25''$ and a : b : c = .9164 : 1 : .6008. If the former view is taken the planes $\infty \breve{P} \frac{02}{100}$, $\infty \bar{P} \frac{100}{52}$, $\infty \bar{P} \frac{102}{50}$, $\frac{102}{100} \breve{P} \frac{102}{100}$, $\bar{P} \frac{102}{100}$ and $\bar{P} \frac{100}{52}$ must be considered as vicinal; whereas if the mineral is considered as monoclinic these (with the exception of the first) become $\infty \text{Ꝑ} \frac{100}{52}$, $\infty \text{Ꝑ} \frac{100}{52}$

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[1] Edited by W. S. Bayley, Johns Hopkins University, Baltimore, Md.

[2] Zeitschrift für Krystallographie, x, p. 346.

[3] V. von Zepharovich. Zeitschrift für Krystallographie, x, p. 601.

[4] Zeitschrift für Krystallographie, xi, p. 23.

$-P, +P, -\breve{P}_2$. Thin plates parallel to the cleavage are translucent to transparent with very weak pleochroism if any. The positive bisectrix is probably perpendicular to the cleavage plane. The dispersion very large, $\upsilon > \rho$, so that for red light the mineral is uniaxial. For green and blue light, however, the optical angle is about 50°. In all its optical properties it resembles rutile very closely.——In attempting to prove by means of etched figures[1] that cryolite is without doubt a monoclinic mineral, Baumhauer[2] has succeeded in showing that in the massive mineral two crystals are so united that (1) ∞P and $0P$ of the one are parallel respectively to ∞P and $0P$ of the other; or (2) ∞P of the first is parallel to $0P$ of the second, and *vice versa*.——Crystals of struvite with a different habit from any heretofore described have been found at Homburg v. d. H., and investigated by Kalkowsky.[3] The planes observed were $P\breve{\infty}$, $0P$, $2P\breve{2}$, $2\breve{P}\overset{\frown}{\infty}$, $\infty P\breve{\infty}$, $P\bar{\infty}$ and $\infty P2$. In physical properties the mineral from this locality also differs from that found elsewhere, $a : b : c = .5685 : 1 : .9113$. The acute bisectrix is the macrodiagonal. The crystals are hemimorphic with $0P$ the analogue pole.——Friedel,[4] of München has analyzed pure staurolite from Framnitzberg, and found it to correspond to the formula $H_4 (Mg\,Fe)_6 (Al\,Fe)_{24} Si_{11} O_{66} = (Mg\,Fe)_6 Al_6 (Al\,O)_{18} (O\,H)_4 (SiO_4)_{11}$, in which the oxygen ratio is 2 : 1.——Doelter[5] has recently succeeded in effecting the synthesis of several minerals of the group of the sulphides and sulpho-salts by the use merely of those reagents which exist naturally, and at a temperature much lower than that usually employed in such experiments. Pyrite was obtained in crystals by the action of sulphuretted hydrogen on hematite at a temperature of 200°, and also by the action of an aqueous solution of the same reagent on siderite and magnetite, in sealed tubes at 80°–90°. Galena was obtained by heating together cerussite and an aqueous solution of hydrogen sulphide in a sealed tube to the same temperature. Crystals of cinnabar, covellite, chalcocite, bornite, chalcopyrite, bournonite, miargyrite and jamesonite were all obtained by methods analogous to one or the other of these, and in no case was a high temperature required. The results are of considerable interest as affording a ready means of explaining the origin of some of the most common minerals we have to do with.——Messrs. Friedel and Sarasin[6] recently heated together a mixture of precipitated calcium carbonate and a solution of ten grams of calcium chloride in $60–70^{cc}$ of water in a stell tube lined with platinum. After ten hours heating at 500° the mixture was found to contain little rhombohedra of calcite. With twenty grams of calcium chloride rhombohedra were obtained, which gave on measurement an angle of 105° 46′. Several experiments were made, but in no case was any aragonite formed. ——Hæmostilbite is described by Igelström[1] as a new mineral from the iron mine of Sjoegrufvau, Grythyttan parish, Sweden. It is of a blood-red color by transmitted light, and is found in a gangue of tephroite in fissures with calcite, in a bed of limestone in granulite. An optical examination by Bertrand proved the mineral to be orthorhombic. The acute bisectrix is negative and is perpendicular to the easy cleavage. The optical angle is small and the dichroism very pronounced. In hardness and general appearance it approaches haussmannite. An analysis yielded:

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[1] Cf. AMERICAN NATURALIST, 1886, February, p. 158.

[2] Zeitschrift für Krystallographie, XI. p. 133.

[3] Ib., XI, p. 1.

[4] Ib., X, p. 366.

[5] Ib. XI, p. 29.

[6] Bulletin de la Société Minèralogique, July, 1885, p. 304.

Sb_2O_3	MnO	FeO	Mg(Ca)O
37.2	51.7	9.5	1.6

This composition is represented by the formula, $8MnO, Sb_2O_5$, or $9MnO, Sb_2O_5$, which is very near that of another mineral already described under the name of manganostilbite, with which the hæmostilbite may be identical.

Petrographical News.—A very interesting article has just appeared in the Beilage Band of the Neues Jahrbuch,[2] on the geological and petrographical relations of the porphyries of the Central Alps. In it the author, C. Schmidt, describes the massive rocks of the Grosse and Kleine Windgälle. Among the Jurassic schists an iron-oölite was found. This consists of a reddish limestone containing oölites composed of magnetite, both massive and crystallized, in a groundmass of calcite and hematite, with a rim of a green fibrous mineral which the author thinks might be the chamosite of Bertier. The crystalline rocks are principally gneisses, hornblende rocks (including a peridotite and a porphyritic rock composed of large aggregates of hornblende in a coarse-grained plagioclase in which is also a large amount of augite in smaller granular aggregates) and quartz porphyries, which are divided into five types. As a result of the pressure to which these porphyries have been subjected, some of them are found to pass over into a completely schistose rock in which the original constituents can be traced under the microscope by means of their alteration products. From a study of the granitites and porphyries from other localities in the same region, Schmidt concludes that the Windgälle rock is either a facies of granite or a distinct rock mass, and that it is not possible to declare positively which of these is really the case. The paper is well illustrated by a map and five sections.——Michel Lévy has recently examined[1] a rock from the left bank of the Jamma, a tributary of the Blue Nile. This rock consists of the remains of orthoclase of the first generation in a groundmass of secondary quartz with little crystals of nepheline, orthoclase and amphibole. It is, according to Lévy, a type of rock between the tephrites and the phonolites.——In the same journal Lacroix has a note[2] on the basaltic rocks of County Antrim, Ireland. These are labrador basalts with a typical ophitic structure. They contain the following minerals in the order of their crystallization: apatite, magnetite, olivine, labradorite and pyroxene in lathe-shaped crystals, palagonite, hematite, chlorite and zeolites. The zeolites are in the cavities of the rock. A search was made for the native iron mentioned by Andrews as occurring in these rocks, but none was found.——Four additional parts of the "Erläuterungen zur geologischen Specialkarte des Königreichs Sachsen"[3] have just been published. The sections described are Oschatz-Mügeln by Th. Siegert, Falkenstein by Schröder, Wurzen by Schalch and Auerbach-Lengenfeld by Dalmer. These authors describe the Eibenstock tourmaline granite, the Kirchberg granitite and the slates and sandstones metamorphosed by them.

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[1] Bulletin de la Société Minéralogique, June, 1885, p. 143.

[2] Neues Jahrb. für Mineralogie, etc., Beil. Bd., IV, 1886, p. 388.

MISCELLANEOUS.—The Denison University of Granville, Ohio, has just issued, in its Bulletin of the Laboratories of Denison University, a compendium of petrographical manipulation by C. L. Herrick. The first part is a condensation of the theoretical part of Hussak's book, in which many of the errors of the original have been rectified. The methods in use for the preparation and examination of rock section are described as clearly as might be expected in a treatise of such small size. Unfortunately a few mistakes still remain to confuse the student who attempts to make use of this little work without the aid of an instructor to explain away his difficulties. Most of these errors, however, seem to be due to too much hurry on the part of the composer. On page 132, for instance, the axes of elasticity are spoken of as optical axes. The second part is a translation of Hussak's tables. It is safe to say that in the hands of a consciencious teacher this little pamphlet of Mr. Herrick's will prove of great value to students who desire merely to gain some insight into the methods so generally made use of at present in the study of rocks.

BOTANY.[4]

CARBONACEOUS RESERVE FOOD-MATERIALS IN FUNGI.—M. L. Errera points out in the Comptes Rendus of the French Academy of Sciences a close analogy in this respect between fungi and flowering plants. In the seeds, tubers, &c., of Phanerogams

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[1] Comptes Rendus, CII, No. 8, p. 451.

[2] Ib., 454.

[3] Cf. AMERICAN NATURALIST, April, 1886, p. 374.

[4] Edited by Professor CHARLES E. BESSEY, Lincoln, Nebraska.